

General

Guideline Title

Deep brain stimulation for obsessive-compulsive disorder: systematic review and evidence-based guideline sponsored by the American Society for Stereotactic and Functional Neurosurgery and the Congress of Neurological Surgeons (CNS) and endorsed by the CNS and American Association of Neurological Surgeons.

Bibliographic Source(s)

Hamani C, Pilitsis J, Rughani AI, Rosenow JM, Patil PG, Slavin KS, Abosch A, Eskandar E, Mitchell LS, Kalkanis S. Deep brain stimulation for obsessive-compulsive disorder: systematic review and evidence-based guideline sponsored by the American Society for Stereotactic and Functional Neurosurgery and the Congress of Neurological Surgeons (CNS) and endorsed by the CNS and American Association of Neurological Surgeons. *Neurosurgery*. 2014 Oct;75(4):327-33. [33 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Definitions for the level of evidence (I-III) and levels of recommendation (I-III) are provided at the end of the Major Recommendations field.

The effectiveness of deep brain stimulation (DBS) for obsessive-compulsive disorder (OCD) has been reported in randomized, controlled trials comparing active and sham stimulation. Based on the literature, the following recommendations can be made: (1) There is Level I evidence, based on a single Level I study, for the use of bilateral subthalamic nucleus DBS for the treatment of medically refractory OCD. (2) There is Level II evidence, based on a single Level II study, for the use of bilateral nucleus accumbens DBS for the treatment of medically refractory OCD. (3) There is insufficient evidence to make a recommendation for the use of unilateral DBS for the treatment of medically refractory OCD.

Definitions:

Evidence Classification

Level I: Evidence provided by ≥ 1 well-designed, randomized, controlled clinical trials, including overview (meta-analyses) of such trials

Level II: Evidence provided by well-designed observational studies with concurrent controls (e.g., case-control and cohort studies)

Level III: Evidence provided by expert opinion, case series, case reports, and studies with historical controls

Levels of Recommendation

Level I: Generally accepted principles for patient management that reflect a high degree of clinical certainty (usually this requires Level I evidence that directly addresses the clinical questions or overwhelming Level II evidence when circumstances preclude randomized clinical trials)

Level II: Recommendations for patient management that reflect clinical certainty (usually this requires Level II evidence or a strong consensus of Level III evidence)

Level III: Other strategies for patient management for which the clinical utility is uncertain (inconclusive or conflicting evidence or opinion)

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Obsessive-compulsive disorder (OCD)

Guideline Category

Treatment

Clinical Specialty

Neurological Surgery

Psychiatry

Intended Users

Physicians

Guideline Objective(s)

To conduct a systematic review of the literature and develop evidence-based guidelines on deep brain stimulation (DBS) for obsessive-compulsive disorder (OCD)

Target Population

Adult patients with treatment-refractory obsessive-compulsive disorder (OCD)

Interventions and Practices Considered

Deep brain stimulation (DBS)

- Bilateral nucleus subthalamic
- Bilateral nucleus accumbens
- Unilateral (not recommended)

Major Outcomes Considered

- Effectiveness of treatment
- Carryover effects of deep brain stimulation (DBS)

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

This systematic review was conducted and reported according to preferred reporting items for systematic reviews and meta-analyses (PRISMA). A literature search was undertaken using the PubMed database for articles published between 1966 and October 2012 combining the following words: "Deep Brain Stimulation and obsessive-compulsive disorder" or "electrical stimulation and obsessive-compulsive disorder." These searches resulted in 353 abstracts, which were reviewed by three independent investigators. The flow of information through the different phases of the review is presented in the Figure in the original guideline document. Relevant articles were selected for full-text review and had to meet the following article inclusion and exclusion criteria:

Inclusion

- Clinical series with 6 or more patients treated with deep brain stimulation (DBS). This limit was chosen because, due to the small number of subjects included, studies with fewer than 6 patients often reported the outcomes of individual patients rather than analyzing data for the whole population. In addition, with small sample sizes, the presence of outliers can significantly compromise the analysis of data.
- Clinical series with a minimum postoperative follow-up of 6 months. Although ideally longer follow-up intervals would be desirable, the 6-month timeline was selected because it was the most common follow-up interval reported in the studies pooled for analysis in the review.

Exclusion

- Studies including only preclinical data
- Review articles
- Letters to the editor
- Clinical series with fewer than 6 patients
- Clinical series with a follow-up shorter than 6 months
- Articles reporting on patient populations other than those with obsessive-compulsive disorder (OCD)
- Clinical series in which ablative surgery was used instead of DBS
- Reports that mainly addressed aspects related to surgical technique

Of 352 articles, 7 original articles were retrieved for analysis. A total of 345 studies were excluded for the following reasons: 188 were review articles, 22 included only preclinical data, 51 were letters to the editor or had fewer than 6 patients, 44 addressed other diseases (e.g., Parkinson disease, Tourette syndrome), 6 reported on the effects of ablative procedures instead of DBS, and 34 addressed questions pertinent to targeting or surgical technique. One article was common to both search lists and was included only once.

Number of Source Documents

Six articles were selected for analysis.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Evidence Classification

Level I: Evidence provided by ≥ 1 well-designed, randomized, controlled clinical trials, including overview (meta-analyses) of such trials

Level II: Evidence provided by well-designed observational studies with concurrent controls (e.g., case-control and cohort studies)

Level III: Evidence provided by expert opinion, case series, case reports, and studies with historical controls

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

For each of the articles included, evidence classification was graded according to the American Association of Neurological Surgeons (AANS)/Congress of Neurological Surgeons (CNS) criteria (see the "Rating Scheme for the Strength of the Evidence" field). The level of evidence (i.e., Level I, II, or III) assigned to each article was based on study design, data analysis, and follow-up.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

For each of the articles included, strength of recommendations was graded according to the American Association of Neurological Surgeons (AANS)/Congress of Neurological Surgeons (CNS) criteria (see the "Rating Scheme for the Strength of the Recommendations" field). The strength of recommendation (i.e., Level I, II, or III) was linked to the level of evidence supporting the recommendation. The level of a recommendation could be decreased if there were methodological concerns regarding the studies that provided evidence for that particular recommendation. For each of the studies included, the author's opinion regarding the limitations is discussed in the original guideline document.

Rating Scheme for the Strength of the Recommendations

Levels of Recommendation

Level I: Generally accepted principles for patient management that reflect a high degree of clinical certainty (usually this requires Level I evidence that directly addresses the clinical questions or overwhelming Level II evidence when circumstances preclude randomized clinical trials)

Level II: Recommendations for patient management that reflect clinical certainty (usually this requires Level II evidence or a strong consensus of Level III evidence)

Level III: Other strategies for patient management for which the clinical utility is uncertain (inconclusive or conflicting evidence or opinion)

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

The authors acknowledge the American Association of Neurological Surgeons (AANS)/Congress of Neurological Surgeons (CNS) Joint Guidelines Committee for their review, comments, and suggestions.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate use of deep brain stimulation (DBS) for obsessive-compulsive disorder (OCD)

Potential Harms

Dystonia can occur over weeks to months following deep brain stimulation (DBS)

Qualifying Statements

Qualifying Statements

The information in these guidelines reflects the current state of knowledge at the time of completion. The presentations are designed to provide an accurate review of the subject matter covered. These guidelines are disseminated with the understanding that the recommendations by the authors and consultants who have collaborated in their development are not meant to replace the individualized care and treatment advice from a patient's physician(s). If medical advice or assistance is required, the services of a physician should be sought. The proposals contained in these guidelines may not be suitable for use in all circumstances. The choice to implement any particular recommendation contained in these guidelines must be made by a managing physician in light of the situation in each particular patient and on the basis of existing resources.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report

Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2014 Oct

Guideline Developer(s)

Congress of Neurological Surgeons - Professional Association

Source(s) of Funding

This guideline is sponsored by the American Society for Stereotactic and Functional Neurosurgery and the Congress of Neurological Surgeons (CNS).

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

Dr Hamani is a consultant for St. Jude Medical; Dr Pilitsis is a consultant for St. Jude Medical, Boston Scientific, and Medtronic and has grant support from Boston Scientific, St Jude, Medtronic, and the NIH; Dr Rosenow is a consultant for Boston Scientific; Dr Patil receives research support from Medtronic; Dr Abosch has an ad hoc consulting agreement with Medtronic; Dr Slavin is a consultant, advisory board member, and/or received honoraria from Medtronic, St. Jude Medical, Boston Scientific, Bioness, Greatbatch, Stimwave, and Nevro. The authors have no personal, financial, or institutional interest in any drugs, materials, or devices described in this article.

Guideline Endorser(s)

American Association of Neurological Surgeons - Medical Specialty Society

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the [Neurosurgery Web site](#) .

Availability of Companion Documents

The following are available:

- Deep brain stimulation for obsessive-compulsive disorder: systematic review and evidence-based guideline sponsored by the American Society for Stereotactic and Functional Neurosurgery and the Congress of Neurological Surgeons (CNS) and endorsed by the CNS and American Association of Neurological Surgeons. Supplemental digital content. 2 p. Available from the [Neurosurgery Web site](#) .
- Congress of Neurological Surgeons guideline development methodology. 2012 Feb. Electronic copies: Available from the [Congress of Neurological Surgeons Web site](#) .

In addition, continuing medical education (CME) questions are provided in the [original guideline document](#) .

Patient Resources

None available

NGC Status

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